CLAIMS

1.   A method for controlling the transmitting power in a mobile radio system, in which a
signal is transmitted from a transmitter via a transmission channel of the mobile radio system
and received by a receiver, the method comprising the steps of:

5   evaluating the signal received by the receiver

           generating a power control information item based on the evaluation of the received
signal;

           transmitting the power control information item to the transmitter;

           adjusting the transmitting power at the transmitter in dependence on the power control
10   information item;

           estimating the behavior of the transmission channel;

           estimating the transmitting power needed based on the result of the estimation of the
behavior of the transmission channel;

           wherein the power control information item is generated on the basis of the estimated
15   transmitting power needed and is transmitted to the transmitter; and

           the estimated behavior of the transmission channel is determined by prediction and
the transmitting power needed in future is estimated in dependence on the result of the
prediction of the behavior of the transmission channel.

20   2.   The method as claimed in claim 1, wherein the behavior of the transmission
channel state is estimated by predicting the channel impulse response.

3.   The method as claimed in claim 1, wherein the behavior of the transmission channel
state is estimated by predicting the carrier/interferer ratio.

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4.   The method as claimed in one of claim 3, wherein the behavior of the transmission
channel is estimated at regular intervals, the interval between the individual estimates of the
behavior of the transmission channel and the period over which the behavior of the

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transmission channel is predicted being selected to be shorter than a coherence time of the transmission channel.

5.   The method as claimed in claim 4 wherein the value of the power control information item (6) is adjusted to be linearly dependent on the result of the estimation of the behavior of the transmission channel.

6.   The method as claimed in claim 5 wherein the power control information item is generated in dependence on the estimated behavior of the transmission channel and also additionally in dependence on the instantaneously measured received level of the signal received by the receiver, the proportion of the estimated behavior of the transmission channel in the generation of the power control information item being adjusted in dependence on the characteristic behavior of the transmission channel.

7.   The method as claimed in claim 6, wherein one of the transmitter and receiver is a mobile unit, and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information is reduced at higher speeds of the mobile unit.

8.   The method as claimed in claim 7, further comprising the step of estimating the instantaneous speed of the mobile unit and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information item is adjusted in dependence on the estimated speed of the mobile unit.

9.   The method as claimed in claim 8, further comprising the step of measuring the channel impulse response of the transmission channel, and estimating the coherence time of the transmission channel in dependence on the measured channel impulse response in order to derive the instantaneous speed of the mobile unit therefrom.

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10.   The method as claimed in one of claim 2, wherein the behavior of the transmission channel is estimated at regular intervals, the interval between the individual estimates of the behavior of the transmission channel and the period over which the behavior of the transmission channel is predicted being selected to be shorter than a coherence time of the

10   transmission channel.

11.   The method as claimed in claim 10 wherein the value of the power control information item (6) is adjusted to be linearly dependent on the result of the estimation of the behavior of the transmission channel.

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12.   The method as claimed in one of claim 1, wherein the behavior of the transmission channel is estimated at regular intervals, the interval between the individual estimates of the behavior of the transmission channel and the period over which the behavior of the transmission channel is predicted being selected to be shorter than a coherence time of the

20   transmission channel.

13.   The method as claimed in claim 12 wherein the value of the power control information item (6) is adjusted to be linearly dependent on the result of the estimation of the behavior of the transmission channel.

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14.   The method as claimed in claim 3 wherein the power control information item is generated in dependence on the estimated behavior of the transmission channel and also additionally in dependence on the instantaneously measured received level of the signal received by the receiver, the proportion of the estimated behavior of the transmission channel in the generation of the power control information item being adjusted in dependence on the characteristic behavior of the transmission channel.

15.   The method as claimed in claim 14, wherein one of the transmitter and receiver is a mobile unit, and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information is reduced at higher speeds of the mobile unit.

16.   The method as claimed in claim 15, further comprising the step of estimating the instantaneous speed of the mobile unit and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information item is adjusted in dependence on the estimated speed of the mobile unit.

17.   The method as claimed in claim 16, further comprising the step of measuring the channel impulse response of the transmission channel, and estimating the coherence time of the transmission channel in dependence on the measured channel impulse response in order to derive the instantaneous speed of the mobile unit therefrom.

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18.   The method as claimed in claim 3 wherein the power control information item is generated in dependence on the estimated behavior of the transmission channel and also additionally in dependence on the instantaneously measured received level of the signal received by the receiver, the proportion of the estimated behavior of the transmission channel

5   in the generation of the power control information item being adjusted in dependence on the characteristic behavior of the transmission channel.

19.   The method as claimed in claim 18, wherein one of the transmitter and receiver is a mobile unit, and wherein the proportion of the estimated behavior of the transmission channel

10   in the generation of the power control information is reduced at higher speeds of the mobile unit.

20.   The method as claimed in claim 19, further comprising the step of estimating the instantaneous speed of the mobile unit and wherein the proportion of the estimated behavior

15   of the transmission channel in the generation of the power control information item is adjusted in dependence on the estimated speed of the mobile unit.

21.   The method as claimed in claim 20, further comprising the step of measuring the channel impulse response of the transmission channel, and estimating the coherence time of

20   the transmission channel in dependence on the measured channel impulse response in order to derive the instantaneous speed of the mobile unit therefrom.

22.   The method as claimed in claim 2 wherein the power control information item is generated in dependence on the estimated behavior of the transmission channel and also

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additionally in dependence on the instantaneously measured received level of the signal received by the receiver, the proportion of the estimated behavior of the transmission channel in the generation of the power control information item being adjusted in dependence on the characteristic behavior of the transmission channel.

23. The method as claimed in claim 22, wherein one of the transmitter and receiver is a mobile unit, and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information is reduced at higher speeds of the mobile unit.

24. The method as claimed in claim 23, further comprising the step of estimating the instantaneous speed of the mobile unit and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information item is adjusted in dependence on the estimated speed of the mobile unit.

25. The method as claimed in claim 24, further comprising the step of measuring the channel impulse response of the transmission channel, and estimating the coherence time of the transmission channel in dependence on the measured channel impulse response in order to derive the instantaneous speed of the mobile unit therefrom.

26. The method as claimed in claim 1 wherein the power control information item is generated in dependence on the estimated behavior of the transmission channel and also additionally in dependence on the instantaneously measured received level of the signal received by the receiver, the proportion of the estimated behavior of the transmission channel

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in the generation of the power control information item being adjusted in dependence on the characteristic behavior of the transmission channel.

27.   The method as claimed in claim 26, wherein one of the transmitter and receiver is a mobile unit, and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information is reduced at higher speeds of the mobile unit.

28.   The method as claimed in claim 27, further comprising the step of estimating the instantaneous speed of the mobile unit and wherein the proportion of the estimated behavior of the transmission channel in the generation of the power control information item is adjusted in dependence on the estimated speed of the mobile unit.

29.   The method as claimed in claim 28, further comprising the step of measuring the channel impulse response of the transmission channel, and estimating the coherence time of the transmission channel in dependence on the measured channel impulse response in order to derive the instantaneous speed of the mobile unit therefrom.

30.   A mobile radio system comprising;

a transmitter;

a receiver for receiving a signal of the transmitter transmitted via a transmission channel of the mobile radio system and for evaluating the received signal in order to generate a power control information item in dependence thereon, and to transmit the power control information item to the transmitter;

the transmitter being constructed in a manner such that the transmitting power is adjusted in dependence on the power control information of the receiver;

the receiver being constructed in a manner such that the behavior of the transmission channel is estimated in dependence on the received signal, and the receiver determines the needed transmitting power based on the result of the estimation of the behavior of the transmission channel, and wherein the receiver generates the power control information item

5 and transmits the power control information item to the transmitter on the basis of the determined necessary transmitting power.

31. The mobile radio system as claimed in claim 30, wherein the receiver generates the power control information item in the form of a command for adjusting the transmitting

10 power directed to the transmitter.

32. The mobile radio system as claimed in claim 31, characterized in that the mobile radio system is a CDMA mobile radio system.